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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,291	09/26/2003	Miwa Kozawa	031181	6427

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EXAMINER

CHACKO DAVIS, DABORAH

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 05/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/670,291

Applicant(s)

KOZAWA ET AL.

Examiner

Daborah Chacko-Davis

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-20, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1, 15, 16, 18, and 19, recite the newly added limitation "wherein the resist pattern thickening material is free of cross-linking agents". The specification does not disclose that the resist pattern thickening material is free of crosslinking agents. The specification of the present invention, on page 19, discloses that the resist composition includes additives such as crosslinking agents. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1756

4. Claims 1-20, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent Application Publication No. 2003/0157801 (Kozawa et al, herein after referred to as Kozawa) in view of U. S. Patent Application Publication No. 2003/0170571 (Nozaki et al).

Kozawa, in the abstract, and in [0047], discloses a resist pattern thickening material comprising a resin and a surfactant (claim 1). Kozawa, in [0045], discloses that the resist pattern thickening material is water-soluble (claim 2). Kozawa, in [0092], [0093], [0094], [0095], and [0096], discloses that the surfactant in the resist material includes a non-ionic surfactant such as polyoxyethylene-polyoxypropylene, a cationic surfactant such as alkyl cationic surfactant, and amine oxide surfactant and the like (claims 3-4). Kozawa, in [0050], discloses that the resin is water-soluble (claim 5). Kozawa, in [0052], discloses that the water-soluble resin in the resist pattern thickening material includes polyvinyl alcohol, polyvinyl acetal and the like (claim 6). Kozawa in [0048], [0056], and [0069], discloses that resin in the resist pattern thickening material has a cyclic structure that is water-soluble, wherein the cyclic structure includes an aromatic compound, a heterocyclic compound and the like (claims 7-11). Kozawa, in [0057], discloses that the aromatic compound includes a polyphenol compound, an aromatic carboxylic acid compound and the like (claim 12). Kozawa, in [0099], and [0100], discloses that the resist pattern thickening material further includes an organic solvent such as a cyclic ester organic solvent (claims 13-14). Kozawa, in [0047], [0123], [0124], [0125], [0169], and [0170], discloses a resist pattern (resist pattern to be thickened, reference 3 of figure 1A) formed on the substrate, applying a resist pattern

Art Unit: 1756

thickening material (reference 1 of figure 1A) on to the surface of the resist pattern (reference 3 of figure 1A), wherein the resist pattern thickening material (reference 1) comprises a resin and a surfactant, and said resist pattern thickening material thickens the resist pattern (reference 3) by mixing (penetration, crosslinking by permeation) (see reference 10a of 1B), performing a developing processing on the coated resist pattern thickening material (reference 1 of figures 1A through 1C) such that the part of the resist pattern thickening material that is not intermixed with the resist pattern to be thickened (reference 3 of figure 1A) is dissolved and removed to form a resist pattern, and patterning the underlying layers on the substrate by performing an etching process using the resist pattern as the mask (claims 15-19). Kozawa, in [0119], and [0120

The difference between the claims and Kozawa is that Kozawa does not disclose that the resist pattern thickening material is free of crosslinking agents.

Nozaki et al., in [0065], [0067], and [0071], discloses that the resist pattern thickening material (resist pattern improving material) includes a resin, a surfactant and an organic solvent, and can be provided free of crosslinking agents.

Therefore, it would be obvious to a skilled artisan to modify Kozawa by eliminating the crosslinking agents as suggested by Nozaki et al., because Nozaki et al., in [0071], discloses that the crosslinking agent is non-essential to the resist pattern improving material, and in [0067], discloses that in order to control the variation of the pattern size, and to improve the uniformity of the roughness reducing property of the surface to be treated, the resist pattern improving material composition should be a)

devoid of the crosslinking agent, and b) include a surfactant in said resist pattern improving material.

Response to Arguments

5. Applicant's arguments, filed February 7, 2005, with respect to claims 1-20, have been considered but are moot in view of the new ground(s) of rejection. The 102 rejection made in the previous office action (paper no. 0929) has been withdrawn. A new 103 rejection has been made over claims 1-20 (see paragraph no. 4).

A) Applicants argue that Kozawa et al., requires a crosslinking agent as a component, and is not capable of achieving the present invention as amended.

Kozawa et al., is not depended upon to provide the disclosure that crosslinking agents are not required in the resist pattern thickening material. Nozaki et al., is depended upon to disclose the avoidance of crosslinking agents in resist pattern improving material (thickening material) compositions. See paragraph no. 4.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

Art Unit: 1756

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd

WD

May 14, 2005.



MARK F. HUFF
SUPERVISORY PATENT EXAMINER
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